

Linear Demand Functions

Definitions

Demand function: An equation showing the relationship between the market demand for a product and the price of the product.

Demand schedule: A table showing the relationship between the market demand for a product and the price of the product.

The equation

Quantity demanded of the good

Price of the good

$$Q_D = a - bP$$

This is the quantity that would be demanded if the price was zero. A change in 'a' will shift the demand curve.

A change in 'b' will affect the slope of the demand curve.

Intercepts

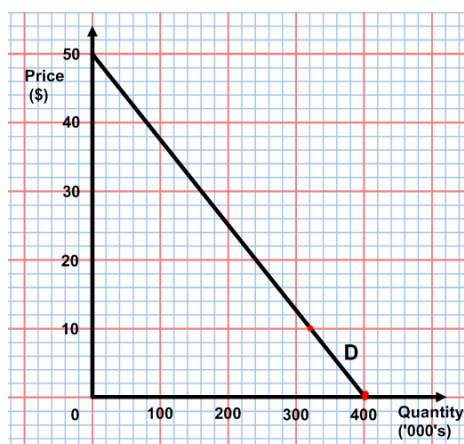
The x-intercept: This is the point where the demand curve meets the x-axis. It is the quantity demanded where price equals zero. It is 'a'.

The y-intercept: This is the point where the demand curve meets the y-axis. It is the price at which quantity demanded becomes zero. All consumers have been driven out of the market.

How to plot / draw the demand curve from a demand function (Using the example $Q_D = 400 - 8P$)

Follow the steps:

1. Find the quantity demanded when the price is zero. This will be the 'a' value. In the example, it is 400 units. This gives one point on the demand curve, known as the x-intercept. In the example, it is the point (400,0), where 400 units are demanded at a price of \$0.
2. Find the price where demand is zero. Make $Q_D = 0$ in the equation. In the example, we get $0 = 400 - 8P$, and so by adding $8P$ to each side, we then get $8P = 400$, and so $P = 50$. This gives a second point at the other end of the demand curve, known as the Y-intercept. In the example, it is the point (0,50), where 0 units are demanded at a price of \$50.
3. So, you now have two points on the demand curve.
4. Draw your axes for the market on a piece of graph paper and insert values for price and quantity. (In IB exams, the axes will already have values on, but **not** labels.)
5. Insert the two points that you have calculated. For our example, this is shown below left:



6. Label the axes and the demand curve. You have done it!

Linear Demand Functions

Definitions

Demand function: An equation showing the relationship between the market demand for a product and the price of the product.

Demand schedule: A table showing the relationship between the market demand for a product and the price of the product.

The equation

Quantity demanded of the good

Price of the good

$$Q_D = a - bP$$

This is the quantity that would be demanded if the price was zero. A change in 'a' will shift the demand curve.

A change in 'b' will affect the slope of the demand curve.

Intercepts

The x-intercept: This is the point where the demand curve meets the x-axis. It is the quantity demanded where price equals zero. It is 'a'.

The y-intercept: This is the point where the demand curve meets the y-axis. It is the price at which quantity demanded becomes zero. All consumers have been driven out of the market.

How to plot / draw the demand curve from a demand function (Using the example $Q_D = 400 - 8P$)

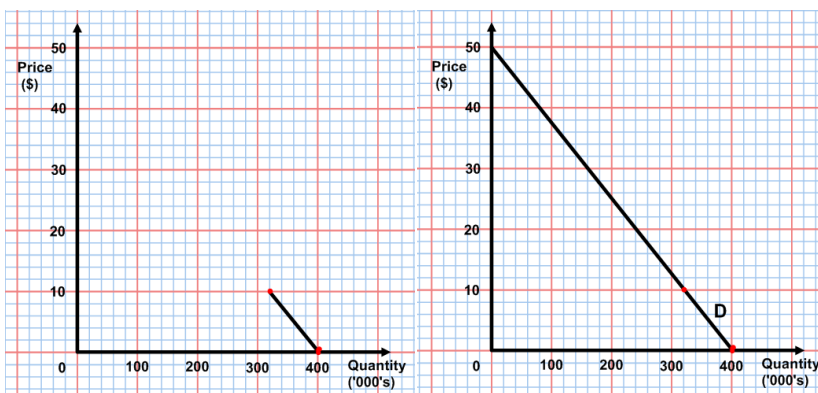
Follow the steps:

1. Find the quantity demanded when the price is zero. This will be the 'a' value. In the example, it is 400 units. This gives one point on the demand curve, known as the x-intercept. In this case, it is the point (400,0).
2. Choose a price above zero. (In IB questions, you will be given the range of price values that you are to consider, so you can choose one of the prices given.) Put it into the equation instead of P, in order to get a quantity demanded at that price. In the example, we could choose a price of \$10.

$$\text{We get } Q_D = 400 - (8 \times 10) = 400 - 80 = 320.$$

So, you now have another point on the demand curve, in the example, it is (320,10).

3. Draw your axes for the market on a piece of graph paper and insert values for price and quantity. (In IB exams, the axes will already have values on, but **not** labels.)
4. Insert the two points that you have calculated. For our example, this is shown below left:



5. Now extend the line to the vertical axis. For our example, this is shown above right.
6. Label the axes and the demand curve. You have done it!